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Original research article

AN AUDIT OF INDICATIONS AND COMPLICATIONS ASSOCIATED WITH ELECTIVE HYSTERECTOMY AT SVMCH AND RC, ARIYUR, PONDICHERRY

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ABSTRACT

Background: Hysterectomy is the most common gynaecological surgery performed worldwide Menorrhagia secondary to uterine fibroids and abnormal menstrual bleeding are the two most common indications for hysterectomy. An important factor impacting on the incidence of complications of hysterectomy, apart from the indication for surgery, is the surgical approach. Majority of the hysterectomies are performed by the abdominal route. The incidence of LAVH performed for benign lesions has progressively increased in recent years. **Methods** : Surgical indications and details, histological findings, and postoperative course were reviewed and analysed for 340 patients who underwent hysterectomy in 2011 and 2012.**Results :** In our study, fibroid uterus (27.9 %) was the leading indication for performing hysterectomies followed by a DUB (22.9%) and uterovaginal prolapse (UVP-21.8%). During the study period (2011-2012), most hysterectomies were performed abdominally (54.4%)**.** Overall post operative complications including major and minor, are significantly higher in the abdominal surgery group as compared to the vaginal and laparoscopic group (p value= 0.001). **Conclusion:** We need to ensure that trainees acquire competency in performing hysterectomies vaginally, which is clearly safer than the abdominal approach.

Keywords: Hysterectomy indications, LAVH, TAH, Intraoperative, Postoperative complications

INTRODUCTION

Hysterectomy is the most common gynecological surgery performed worldwide. After caesarian delivery, hysterectomy is the major surgical procedure most frequently performed in women[1, 2]. With increasing advancement in technology and acquisition of better skills and experience the abdominal route is fast being replaced by vaginal and laparoscopic for majority of indications as many of the surgeons now consider that descent of the cervix and not the uterine size predicts the success of the vaginal route of hysterectomy.

Over the past 2 years various hysterectomies were performed in our hospital through different routes for a variety of indications.

More than half of the hysterectomies are carried out due to abnormal uterine bleeding, which is

associated with a wide range of diagnoses that include uterine fibroids, endometriosis, adenomyosis and dysfunctional uterine bleeding (DUB). Menorrhagia secondary to uterine fibroids and abnormal menstrual bleeding are the two most common indications for hysterectomy.

An important factor impacting on the incidence of complications of hysterectomy, apart from the indication for surgery, is the surgical approach.

The type of hysterectomy depends on the disorder be treated, the size of the uterus, and the skills and preference of the surgeon. The abdominal approach is indicated in most cases of uterine cancer, in cases of emergency hysterectomy, and in patients with large fibroids.

Laparoscopic assisted vaginal hysterectomy (LAVH) and Vaginal hysterectomy (VH) is clinically and economically comparable with Total abdominal hysterectomy (TAH), with patients' benefits of less estimated blood loss, less analgesia use, less intra- and postoperative complication rates, less postoperative pain, rapid patient recovery and shorter hospital stay[3].Studies have reported fewer unspecified infections or febrile episodes in the vaginal group versus the abdominal group[4]. The number of doses of injectable analgesics used per patient was significantly more in the TAH group in comparison to LAVH group. Overall complication was 14% in LAVH and 10% in TAH though the differences were not significant[5].

In LAVH, greater total uterine weight and morcellation are associated with longer operative times. Blood loss correlates with uterine weight when vaginal morcellation is also used. An increase in the operative time and a higher blood loss can be expected as the uterine weight increases and can be predicted taking morcellation methods into account[6].

Assessing surgical approaches according to the type and severity of complications identifies the risk factors most strongly associated with each approach. Further, by giving rise to technical improvement, such assessment will result in safer patient treatment.

MATERIALS AND METHODS

Surgical indications and details, histological findings, and postoperative course were reviewed and analysed for 340 patients who underwent hysterectomy in 2011 and 2012 at SVMCH & RC, Ariyur, Pondicherry. Institutional Research, Science and Ethical committee approval was obtained and informed consent was taken from each patient prior to surgery.

The patients are admitted 2-3 days before surgery and a complete work up of the case is done. Co morbid medical conditions like diabetes, hypertension, heart disease, thyroid disease if any, are looked into and cardiologist or physician's opinion is sought for the same.

Patients with Hb<10 gm% are transfused with blood according to their Hb values. Preoperative fitness for each patient is obtained from the anaesthetist prior to posting the case. Depending on the indication and route of surgery being performed preoperative preparation is done. Routinely pre op IV antibiotics like cefotaxime are given to all patients half an hour before the surgery. 1 unit of blood is reserved for each patient on the day of surgery.

Foley's catheterization is done for all the patients undergoing TAH preoperatively and immediately following surgery in case of LAVH, VH and NDVH. Vaginal pack (Roller gauze with betadine) is routinely kept in all cases of LAVH/VH/NDVH for 24 hrs. Romovac drain is considered in those patients in whom intra operative oozing is noticed.

In the postoperative period all patients are kept for observation and monitoring in the surgical ICU. Post operative Hb and PCV is routinely done the following day morning and patients with Hb<7 and PCV<21 are given a blood transfusion and routine IV antibiotics (Cefotaxime and Metronidazole) are continued for 48 hours followed by oral antibiotics for 5 days. Metronidazole is discontinued for patients who have nausea & vomiting as side effects of the drug. Inj.Gentamycin is added in indicated cases of VH with meshplasty, diabetic patients, cardiac

or infected cases. Foley's catheter is kept for 24 hrs routinely for abdominal hysterectomy and 48hrs for VH/LAVH/NDVH and extended bladder drainage is considered in patients who had required difficult bladder dissection during surgery. Romovac drain is removed when the drain output is < 25ml.

Patients with abdominal hysterectomy are discharged on the 7th or 8th day after suture removal, while NDVH/VH/LAVH patients are discharged on the 4th postoperative day. All patients are advised to review after 6 weeks or earlier in the event of any unforeseen complications.

Histopathology reports are routinely reviewed at 6 weeks. However, in patients whom malignancy is suspected the same is reviewed after 2 weeks.

RESULTS

Statistical analysis of the data was done by using SPSS version 17. Considering the age wise distribution pattern of patients who underwent hysterectomy the majority of women were in the age group of 40 -49 years (193). However, the second leading age group was that of young women 30-39 years (68). The younger women hysterectomised were about 30 years of age, for varied indications like fibroid uterus or adenomyosis. The overall mean age was 46.9 years. Considering the varied pre operative diagnosis for hysterectomy, the highest mean age was 57.8 years in cases of genital malignancies followed by 55.7 years in cases of UVP, whereas the lowest was 40.7 years in cases of pre malignant conditions and Adenomyosis .

Preoperative diagnosis showed in Table 1. In our study, fibroid uterus (27.9 %) was the leading indication for performing hysterectomies followed by a DUB (22.9%) and uterovaginal prolapse (UVP-21.8%)

During the study period (2011-2012), most hysterectomies were performed abdominally (54.4%), an approach that is associated with higher incidence of complications. However, in 2012, the percentage of hysterectomies done abdominally reduced to 26.8 %(40/149).On the contrary, 73.2% of hysterectomies were performed vaginally (LAVH – 61/149, NDVH – 10/149, VH – 38/149) [Table II, Figure I]

On analysis of 185 patients, who underwent hysterectomy by an abdominal approach over a period of 2 years, 5 were for malignant(cervical, endometrial, ovarian), 29 were for suspected large adnexal masses and 40 for large fibroid uterus (uterine size > 20weeks). Remaining 111 abdominal hysterectomies were done for benign indications like DUB, fibroid uterus or Adenomyosis, which could have been considered for LAVH or NDVH. This is explained by lack of laparoscopy expertise at our centre during the early part of our study period.

Table. 1: Preoperative diagnosis

S.No	Diagnosis	No of patients	Percentage (%)
1.	Dysfunctional uterine bleeding	78	22.9%
2.	Fibroid uterus	95	27.9%
3.	Adenomyosis	33	9.7%
4.	Utero vaginal prolapse	74	21.8%
5.	Adnexal mass	29	8.5%
6.	Chronic cervicitis	8	2.4%
7.	Pre malignant conditions	8	2.4%
8.	Genital malignancy	5	1.5%
9.	Post menopausal bleeding	10	2.9%
Total	-	**340**	**100%**

The route of hysterectomies was performed showed in the Table 2.

Table. 2 : Route of surgery

S.No	Route	No of patients 2011 (%)	No of patients 2012 (%)	Total (%)
1.	TAH	142(74.3%)	35(23.5%)	177(52.1%)
2.	VH	38(19.9%)	38(25.5%)	76(22.4%)
3.	NDVH	Nil	10(6.7%)	10(2.9%)
4.	LAVH	8(4.2%)	61(40.9%)	69(20.3%)
5.	Wertheim's	2(1.0%)	2(1.3%)	4(1.2%)
6.	Subtotal	1(0.5%)	Nil	1(0.3%)
7.	Staging laparotomy	Nil	3(2.0%)	3(0.9%)
Total		**191**	**149**	**340**

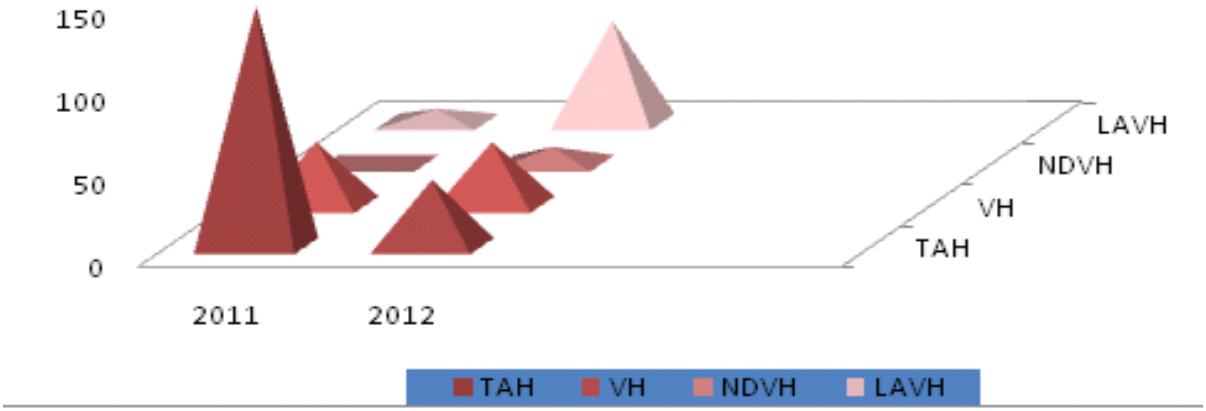

Fig 1 : Trend of hysterectomies in 2011 & 2012

Table.3: Correlation of age, Preoperative & Histopathological Diagnosis

Indication	Mean age	No pathology	Fibroid	Adenomyosis	Benign Ovarian	Chronic cervicitis / SIL	EH**	Ca Ovary	Ca uterus	Ca cervix	Endometriosis	Total
DUB*	43.8	40	7	15	-	-	14	-	1	-	1	78
Fibroid	41.2	5	75	15	-	-	-	-	-	-	-	95
Adenomyosis	40.7	6	5	22	-	-	-	-	-	-	-	33
Prolapse	55.7	70	2	-	1	-	3	-	-	-	-	74
Adnexal mass	47.7	1	-	-	24	-	-	2	-	-	-	29
Chronic cervicitis	45.2	-	-	-	-	8	-	-	-	-	-	8
Premalignant conditions	40.7	-	-	1	-	1	5	1	-	-	-	8
Genital Malignancy	57.8	-	-	-	-	-	-	1	-	4	-	5
PMB†	49.6	3	-	3	-	-	4	-	-	-	-	10
Total	46.9	125	89	56	25	9	26	4	1	4	1	340

*Dysfunctional uterine bleeding, †Post menopausal bleeding, **Endometrial Hyperplasia

An analysis of Histopathological reports, 125 out of 340 women (36.8%), revealed no significant pathology. Out of these women, a majority of the 70 women (56%) underwent hysterectomy for

UVP, while in 40 women (32%); the indication for surgery was DUB. In the remaining 15 patients, the indications were fibroid uterus, Adenomyosis or postmenopausal bleeding (PMB) [Table 3]

Out of 78 women hysterectomised for DUB, a majority of the 40 women (51.3%) had no pathology in the uterus, while 15 (19.2%) had Adenomyosis, 14 had endometrial hyperplasia (EH-17.9%) and 7 patients (9%) were diagnosed with fibroid uterus. One patient with a preoperative diagnosis of DUB, aged 52 years was diagnosed as having endometrial cancer on HPR (Not diagnosed on Fractional curettage). One case of DUB surprisingly showed HPR of Degenerated products of conception.

95 women (27.9%) in our study underwent hysterectomy for fibroid uterus, out of which a majority of 75 women (79%) had histopathologically proven fibroids.

In the remaining 20 patients, 15 had Adenomyosis, while 5 patients had normal uteri with no definitive pathology. 14 other patients with incidental findings of leiomyoma on HPR were operated for varied indications like DUB, Adenomyosis or prolapse uterus.

In the 74 women with UVP, who underwent VH, majority of 70 women had no pathology on HPR. Operated 33 cases with a preoperative diagnosis of Adenomyosis of which only 22 had proven Adenomyosis on HPR. Total number of HPR showing Adenomyosis was 56 in our study, out of which, in 34 patients, the preoperative diagnosis was not Adenomyosis. This indicates that the true incidence of Adenomyosis is higher compared to clinical or sonological diagnosis.

We operated 29 cases of adnexal masses, out of which 24 were benign tumours, while 2 were malignant.

In our study, 5 bladder injuries (1.4%) were noted over a period of 2 years, out of which 2 were in TAH (1.1%) & VH (2.6%) each and 1 was seen in LAVH (1.4%). All were identified on the table and bladder repair was done. In addition 3 ureteric injuries were noted, all in the abdominal hysterectomy group for large adnexal mass, carcinoma cervix and carcinoma ovary respectively. These injuries were identified post operatively. The difference was however not significant statistically (p value= 0.84) [Table 4]

Table.4: Intraoperative complications

Hysterectomy	Diagnosis	Haemorrhage with transfusion	Bladder Injury	Bowel Injury	Ureteric Injury	Total
TAH/Subtotal						4 / 178
1.	DUB	-	Yes	-	-	
2.	Chr cervicitis	-	Yes	-	-	
3.	Adenomyosis	Yes	-	-	-	
4.	Adnexal mass	-	-	-	Yes	
LAVH						2/69
1.	Adenomyosis	-	Yes	-	-	
2.	Fibroid uterus	Yes	-	-	-	
VH/NDVH						2/86
1.	UVP	-	Yes	-	-	
2.	UVP	-	Yes	-	-	
Wertheim's						¼
1.	Ca Cervix	Yes	-	-	Yes	
Staging Lap						2/3
1.	Ca Ovary	Yes				
2.	Ca Ovary				Yes	
Total No. of complications		4	5	Nil	3	11/340 (3.2%)

Considering the immediate postoperative complications, pyrexia was noticed in 14.1% of patients with TAH. On the contrary, 3.2% of patients in the vaginal group (LAVH, NDVH, and VH) had significant post operative fever [Table 5].

Table 5: Immediate postoperative complications

Complication	Approach to hysterectomy					No complications
	TAH	LAVH	VH/NDVH	Wertheim's	Staging laparotomy	
Pyrexia	25	3	2	Nil	Nil	30
Haemorrhage	3	Nil	4	Nil	1	8
Wound sepsis	9	Nil	Nil	1	1	11
Pain	12	1	Nil	1	Nil	14
Urinary complaints	8	Nil	3	1	Nil	12
Second laparotomy	2	Nil	Nil	Nil	Nil	2
Pulmonary Embolism	Nil	Nil	Nil	Nil	Nil	0
Death	Nil	Nil	Nil	Nil	Nil	0
Resuturing	5	Nil	Nil	Nil	Nil	5
Vault exploration	3	Nil	1	Nil	Nil	4
Total no of pts. With complication	67 (37.8%)	4 (5.8%)	10 (11.6%)	3 (75%)	2 (66.6%)	86/340 (25.3%)

Immediate postoperative complications like haemorrhage, wound sepsis, pain, urinary complaints were noticed in 20.1% of patients with abdominal surgery as compared to 5.2% of patients in the laparoscopic and vaginal group.

Relaparotomy was done in 2 cases of abdominal hysterectomy and 5 cases were taken for wound resuturing. No such complications were noticed in the vaginal group.

Vault exploration had to be done for 4 patients out of which 3 were following abdominal hysterectomies.

An analysis of major complications in hysterectomised patients from the time of discharge up to 6 weeks post op, 1 patient with abdominal surgery had Deep vein thrombosis, 4 patients had vesico vaginal fistula (2%) and 1 patient had uretero vaginal fistula (0.5%). On the contrary, only 1 patient of vaginal hysterectomy had a vault granuloma on 6 weeks follow up. No patients in the LAVH or NDVH group had any of the above complications on follow up. However the difference in the rates of fistula formation in abdominal vs. vaginal route is not statistically significant (p value =0. 12) [Table 6]

Table.6: Complications from discharge upto 6 weeks post surgery

Complication	No. of occurrences
Pain	15(TAH) + 2(LAVH)
Poor wound healing	5(TAH)
Vault prolapse	1(TAH)
Deep vein thrombosis	1(TAH)
Vesico vaginal fistula	4(TAH)
Uretero vaginal fistula	1(TAH)
Vault granuloma	1(VH)
Total no of patients	30/340 (8.8%)

Overall post operative complications including major and minor, are significantly higher in the abdominal surgery group as compared to the vaginal and laparoscopic group (p value= 0.001)

In our series, the incidence of carcinoma ovary and carcinoma cervix was 1.17% each whereas carcinoma endometrium and endometriosis were least i.e. 0.29% each.

In pre malignant conditions, one case was cervical dysplasia, 26 were endometrial hyperplasia, out of which two showed hyperplasia with atypia.

DISCUSSION

Hysterectomy is the major surgical procedure most frequently performed in women, after caesarian delivery.[1, 2] In our series, 20% of hysterectomies were done in the age group of 30-39 years. An Indian study in 2010 showed that 33% of hysterectomies were performed in women less than 35 years of age[7]. These numbers could have been further reduced by using alternative therapeutic options like levonorgestrel-releasing intrauterine system, endometrial ablation or fibroid embolisation. Kripalani et al found that Ormeloxifene was an effective and a safe therapeutic option for the medical management of menorrhagia[8] . This would further decrease the number of hysterectomies for DUB. These figures stress upon the need for encouraging the treatment of benign conditions conservatively and offering hysterectomies more often to women with defined pathologies in the perimenopausal or menopausal age group.

Fibroid uterus (27.9%) was the most common indication for hysterectomy, followed by DUB and UVP. A Nigerian tertiary hospital retrospective study showed that uterine fibroid was the leading indication in 38.7% of patients[9]. We do not have the data to analyze the percentage of women with fibroids who were symptomatic to justify hysterectomy as the only treatment modality in our study group. Few hysterectomies were performed for genital malignancies at our centre over the study period of two years.This is due to the non availability of the onco-surgeons. We deny hysterectomy for chronic cervicitis, hence the incidence is low at 2.4%.

Most surgeons perform up to 80% of procedures by the abdominal route [10] . The incidence of LAVH performed for benign lesions has progressively increased in recent years[11]. During our study period, 54.4% of surgeries were performed abdominally. However, in the later part of the study, this was reduced to 26.8%, in favour of 73.2% of hysterectomies that were performed vaginally. This is explained by lack of laparoscopy expertise at our centre during the early part of our study period .This also indicates a favourable trend towards adopting a vaginal approach for hysterectomy in contrast to abdominal approach at our institute.

The high incidence of abdominal hysterectomies can in part be explained by personal preference, but is mainly due to lack of training and experience leading to reluctance to perform VH in nulliparous women in the presence of uterine enlargement or in women with previous pelvic surgery or previous caesarean section. The above factors should not be considered contraindications to VH, and there are publications that support this view [12, 13]. The rationale for LH is to convert an abdominal hysterectomy (AH) into a laparoscopic/vaginal procedure and thereby reduce trauma and morbidity[10].

Urinary tract injuries are reported in approximately 1 percent of women who undergo pelvic surgery[14] . Studies have reported that the rate of injuries varies by indication and procedure, being highest following radical hysterectomy for cervical cancer (1 in 87; 95% CI 61-128) and lowest following vaginal hysterectomy for prolapse (1 in 3861; 95% CI 2550-6161).

After total abdominal hysterectomy, risk was lower after hysterectomy for benign conditions[15]. In our series, 2.4% of women had urinary tract injuries (5 bladder injuries, 3 ureteric injuries). On analysis of these, we noted that amongst the bladder injuries, 2 were in TAH(1.1%), 2 in VH(2.6%) and 1 in LAVH(1.4%).In a study by

Babak Vakili et al, there were 8 cases of ureteral injury (1.7%) and 17cases of bladder injury (3.6%) There was no difference in the rate of bladder injury among TAH, TVH, and LH (2.5% vs. 6.3% vs. 2.0%, respectively; P = .123), although there was a trend toward a higher incidence of bladder injury with vaginal hysterectomy[16].A similar trend was observed in our study.

Vakili et al have also reported, that abdominal hysterectomy was associated with a higher incidence of ureteral injury as compared to VH or LH (2.2% vs. 1.2% vs. 0%) but this was not significant.Vakili et al have concluded that surgery for prolapse or incontinence increases the risk of urinary tract injuries. Thus routine use of cystoscopy during hysterectomy should be considered[16].However, this is difficult to accept in routine gynaecology practice.

On analysis of surgical fistulas, 4 patients had VVF (2%) and 1 patient had uretero vaginal fistula (0.5%).All fistulas were noted in abdominal surgeries and all patients presented with urinary leak 10-14 days post surgery. Surprisingly, all of them were seen in surgeries performed in a particular unit. The contribution of surgical fistulas to the total fistula prevalence in developing countries is small, however it is often supposed that this complication results from direct injury to the lower urinary tract at the time of operation but this is certainly not always the result of careless, hurried, or rough surgical technique. In a study on Vesico-vaginal fistulas in developing countries, of the 165 urogenital fistulas over the last 12 years, 117 were associated with pelvic surgery, and 91 followed hysterectomies; of these only 4% presented with leakage of urine on the first day post operatively. In the other cases it was presumed that tissue devascularization during dissection, inadvertent suture placement, or pelvic hematoma formation or infection developing postoperatively resulted in tissue necrosis with leakage usually developing 5–14 days later. Over distension of the bladder postoperatively may be an additional factor in many of these latter cases .It is likely that patients with a habit of infrequent voiding, or those with inefficient detrusor contractility, may be at increased risk of postoperative urinary retention; if this is not recognized early and managed appropriately, the risk of fistula formation may be increased. The use of prophylactic catheterization in the first 24–48 h might be expected to reduce the risk of post-operative fistula formation, but this has never been proven[17].

CONCLUSION

Hysterectomy is a major gynecologic operation and more cases of hysterectomy should be performed vaginally, considering the numerous benefits it has over the abdominal route. We need to ensure that trainees acquire competency in performing hysterectomies vaginally, which is clearly safer than the abdominal approach.

The prophylactic use of antibiotics to reduce infection and fever, the adequacy of analgesic regimens, and the correct dosage of prophylactic heparin treatment are some of the other issues that should be audited to reduce post operative complications. Ideally, we should be able to provide more medical options, such as the levonorgestrel intrauterine system, whenever appropriate, and to have available the equipment and collective skill necessary to provide any patient with the most appropriate surgical treatment.

Because, few studies have recently been conducted regarding the indications for and complications of elective hysterectomies, the present study may provide a basis for a future audit of our gynaecological practice and for the comparison of our practice with others.

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